

REMARKS

The rejection of claims 1-3 under 35 USC §103(a) in view of U.S. Patent Nos. 1,149,485 (Wilcox) and 5,917,143 (Stone) is respectfully traversed on the grounds that:

- the Wilcox patent merely discloses the prior art described in the introductory portion of the present specification, namely machining of a cannelured **non-frangible** projectile; and
- the Stone patent does not make up for the deficiencies of Wilcox patent also does not teach canneluring a frangible projectile, but to the contrary teaches a non-cannelured frangible projectile.

As explained in the introductory portion of the present specification, it is well-known to include cannelures in non-frangible projectiles. However, none of the hundreds or thousands of patents disclosing cannelured projectiles, and none of the hundreds or thousands of patents disclosing frangible projectiles, discloses canneluring a frangible projectile. The reason is that conventional machining or milling techniques tend to fracture or weaken a frangible projectile, which is typically made of a compressed powder rather than a solid material.

The present invention solves the problem of canneluring a frangible projectile by using a unique machine method in which the machining is carried out using a special cutting tool **having a flat surface with beveled edges to the projectile body** in order to machine cut the cannelure. Conventional cannelures such as the one disclosed in the Wilcox patent are not made with the claimed bevels.

According to the Official Action, the Wilcox patent “*disclose the invention substantially as claimed including a method of canneluring a frangible projectile comprising the steps of positioning, in a cutting machine, a projectile body, rotating the body around a longitudinal axis at a high rate of speed, and applying a cutting tool having a flat surface with beveled edges to the body.*” This conclusion is wrong in two respects:

1. Wilcox does not concern a frangible projectile, and
2. Wilcox does not teach machining using a cutting tool with beveled edges.

Since the point of the invention is to cannelure a frangible projectile, and since canneluring a frangible projectile is only made possible by using a cutting tool with beveled edges, it being well-known to cannelure non-frangible projectiles, it cannot reasonably be said that the Wilcox patent discloses the invention substantially as claimed. To the contrary, Wilcox merely discloses the background of the present invention, and discloses none of the advantageous features.

The term **frangible projectile** is well-known to those in the field of manufacturing small-arms ammunition. It refers to a specific type of projectile that is designed to fracture or disintegrate upon impact, so that it does not penetrate the target. For example, the "Cartridge Collector's Glossary," a copy of which is attached as Exhibit I, defines "frangible bullet" as a "*bullet made of various powdered and compressed material which was designed to break up on impact rather than penetrate.*" **The bullet of Wilcox is made of a wire rod (page 1, line 64) and therefore is clearly not frangible according to the usual definition of "frangible" as used by those skilled in the art.**

Because frangible projectiles are not hardened, they are very difficult to machine, which is why the unique machining method of the invention is required. It would not have been obvious to use the claimed compressed powder in the projectile of Wilcox because Wilcox does not teach a frangible projectile, and one of ordinary skill in the art would not have used compressed powder in an ordinary, non-frangible projectile.

The use of compressed powder in a frangible projectile is what makes it frangible. Ordinary projectiles such as the one disclosed in the Wilcox patent are not frangible. Frangible projectiles are used for practice or target shooting, whereas hunting, law enforcement, and other small arms applications require hardened projectiles. Because they are hardened, it is easy to machine a conventional projectile. Because they are made of powder, frangible projectiles have conventionally been molded and not machined.

By adding a bevel to the cutting tool, the claimed invention distributes the cutting force in such a way that fracturing of the relatively fragile frangible projectile is avoided. Wilcox does not teach such beveling, contrary to the statement in the Official Action. **While prior art machine cutting tools often have beveled edges, there is no evidence that such beveled tools are used for canneluring.** Wilcox does not teach any beveling. *Furthermore, even if such tools were used for canneluring the projectile of Wilcox, there is no suggestion for using such a tool to machine a frangible projectile, and no suggestion of using the tool in such a way that the finished projectile has a cannelure with the claimed beveled edges*, much less one with the claimed 45° bevel as recited in new claim 11.

The Examiner is reminded, as explained in *In re Fritch*, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992), that:

...'*Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined only if there is some suggestion or incentive to do so* [quoting ACS Hosp. Systems, Inc. v. Montefiore Hosp., 221 USPQ 929, 933 (Fed. Cir. 1984)].' *Although couched in terms of combining teachings found in the prior art, the same inquiry must be carried out in the context of a purported obvious 'modification' of the prior art. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.*

It is respectfully submitted that since the Wilcox patent only suggests, as is admittedly well-known, canneluring a non-frangible, non-powdered projectile, and since none of the other references of record, including the Stone patent, suggests adding a cannelure to a frangible, powdered projectile (the Stone patent merely teaching a frangible powdered projectile without a cannelure), it cannot reasonably be concluded that one of ordinary skill in the art would have found it obvious to cannelure a frangible powdered projectile. Withdrawal of the rejection of claims 1-3 under 35 USC §103(a) is accordingly respectfully requested.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

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Respectfully submitted,

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